QUARTERLY STATUS REPORT No. 8

Period 14 April 1966 - 13 July 1966

MODIFICATION OF 82-INCH COUDE SPECTROGRAPH AT McDONALD OBSERVATORY

Contract NASr-230

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Previous reports have documented the necessary extensive improvements made in the dome, coude room, coude support frame, optical train, and grating system, in order to make the coude spectrograph more accessible, more suitable, and faster for high-dispersion planetary and other spectroscopy.

A. Activity During the Present Reporting Period

Work during the April-July reporting period took place principally in three areas:

1. Mechanical design, by J. Floyd and the Austin engineering group continued (when time permitted after completing work on the most urgent parts of the 105-inch telescope design and on several crises with current observing equipment). Beginning July 1, the engineering priorities were changed to put the 82-inch coude modifications at the top of all other jobs, to ensure their completion several months ahead of the previously planned time of December. A detailed schedule for the remaining coude work was made and sent to NASA on July 11, 1966. As of the end of this reporting period, all scheduled events occurred on or before time. Specifically, the engineering was completed on the collimator mount, rear support, collimator optics and guider assembly optics. The guider assembly was aligned properly by Dr. R. G. Tull at the Observatory and can be completed with materials on hand; therefore, the remainder of the schedule is not applicable until "Installation Start." Completing the design and drafting of the slit plate required additional work on the coude frame location, and both are now complete.

2. Optical ordering involves for the time being at least, only the new collimator (gradual improvement of the cameras would also probably be desirable at some time in the future). Bids were taken but rejected because of exorbitant cost and long delivery. With the kindness of Dr. Kuiper, subsequent negotiations led to the order being placed with the Lunar and Planetary Observatory Optical Shop under Mr. Waland, for delivery in mid-September.

3. Image tube testing was undertaken again, and the focus found to be excellent outside the coude room, but still bad within. (This effect, for some time blamed on magnetic defocusing of the tube by the great amount of surrounding steel in the coude room, was traced by H. Smith during a week's stellar observing in early August to a defective supposed-optical-flat used to feed the image tube only when it is in the coude room; after correction of this trouble the focus there is now quite good, and the magnetic distortion appears to be small if not negligible.) The present Carnegie image tube with its S-20 cathode offers no advance over color photography beyond about 7000 Å, nor with our spectrograph to any camera other than the one of longest focus, and thus will not directly be applicable to many current problems of Mars or other planets. But the advance in technique is important: when a good S-1 image tube finally becomes available, it should be possible to start with little delay useful work out to 11,000 Å covering many features of planetary interest.

B. Financial Report

NASA Form 1030 (2-64) for this contract is submitted quarterly by the Auditor's Office of The University of Texas.